

REMARKS

Claims 47 – 54, 56 – 58 and 60 – 67 are pending in the application.

The Examiner is thanked for sending a copy of the originally filed disclosure, and for the courtesy of a telephone interview with the undersigned on 24 January 2002.

Various of the claims have been amended to address the 35 USC §112 rejections, as well as to more clearly distinguish the claims from the cited art.

Independent claims 47 and 54 have been corrected to indicate that the percentage by weight of water is 65% to 99%, in accordance with the original disclosure.

Claims 47 and 54 have also been amended to include the additional feature that the liquid cleaning composition is, during cleaning, maintained in a status of an emulsion, for example by mechanical agitation (claim 47). Support for this feature can be found, for example, on page 7, lines 1 – 7, and on page 17, lines 11 – 16. These text passages indicate the formation of the emulsion, for example by mechanical agitation of the liquid cleaning composition, which emulsion has an excellent fat dissolving capability, i.e. during cleaning, and the capability of dissolving water soluble substances.

With regard to the objection to “a cleaning process temperature”, it should be noted by way of explanation that such a temperature is that which prevails during liquid cleaning, in other words, the cleaning during which the articles that are to be cleaned are brought into contact with the liquid cleaning composition; such cleaning temperature is below the boiling point of the liquid cleaning composition. Claims 47 and 54 have

been amended to indicate that this temperature is a temperature "at which a cleaning takes place". If preferred by the Examiner, other language, such as "at a temperature during cleaning", could also be used.

With regard to the objection to the term "azeotrope", it is respectfully submitted that the Examiner has adopted an unduly restrictive position. As indicated on page 2 of the specification of the instant application, a liquid forms an azeotrope when its constituents, in the present case water and the organic component, pass into the vapor phase in a well-defined, constant relationship, which relationship can differ from the percentages of the constituents in their liquid state. The Examiner's attention is respectfully directed to WO 96/28535, table III on page 13, wherein the cleaning liquid has a concentration of 17.7% water in DPnP. This cleaning liquid forms an azeotrope having a solvent content of 10%, i.e. a percentage that is different from the solvent content of the basic liquid. Thus, it is respectfully submitted that a liquid, which forms an azeotrope, is a liquid that, when boiling, forms a vapor having a constant composition, with such vapor composition being independent of the composition in the liquid state. Claim 51 defines a specialized concentration of a liquid that has the same composition in the vapor state as in the liquid state. It is furthermore submitted that an azeotropic liquid that comprises two components can be plotted in a graph showing the boiling temperature versus the concentration of one component, and having a maximum or a minimum. The azeotropic point is the point of this maximum or minimum, i.e. at the azeotropic point the composition of the liquid is the same as that of the vapor; the boiling point is constant during the entire vaporization. Thus, it is respectfully submitted

that the manner in which "azeotrope" is used in the claims of the instant application is consistent with the understanding of one having ordinary skill in the art.

Also with regard to claim 50, the Examiner has indicated that this claim lacks a step of forming the vapor; however, claim 50 provides the step "of vaporizing said liquid cleaning composition", so that the Examiner's objection is not understood.

The Examiner's objection to claim 49 has been addressed and this claim has been clarified.

With regard to claim 61, the Examiner's assistance is respectfully requested. In a previous amendment, it was attempted to amend claim 61 to be consistent with the original disclosure, although with corrections for errors that should have been obvious to one of ordinary skill in the art.

With regard to the cited references, EPA 475, 596 discloses the cleaning of dirty articles by contact with a solvent that is hydrogenated or dehydrogenated analogue of a terpene compound, wherein the solvent contamination that results from the liquid cleaning process is removed by contacting the contaminated surface, at an elevated temperature, with steam or some other suitable medium and by evaporating the solvent contamination from the surface. Thus, the cleaning is performed with a liquid cleaning composition that is entirely different from the one of the present invention, because terpene is not an organic component containing molecules having lipophilic and hydrophilic groups, as required by independent claims 47 and 54 of the present application. Furthermore, the liquid cleaning bath is a bath that contains only solvent (see column 8, lines 55 and 56). In addition, the liquid cleaning composition of this

reference is not maintained in a status of an emulsion during cleaning, as required by amended claims 47 and 54. Above the second tank 5 of this reference there is maintained a water vapor or steam atmosphere. The cleaned articles may be immersed in the boiling water of the tank 5 and then in the steam of tank 8. In doing so, any terpene residue is dissolved in the water or steam, so that the azeotrope condensate (the mixture of terpene and water before being boiled has no predetermined concentration) can be recycled, since the condensate separates into an aqueous phase and a solvent phase.

In view of the foregoing, it is respectfully submitted that this reference neither anticipates nor makes obvious the method or cleaning composition of amended independent claims 47 and 54.

With regard to WO 96/28535, this reference teaches a cleaning process where an article is contacted with a cleaning agent containing 0.01 to 80 weight percent of water and 99.9 to 20 weight percent of an organic solvent, which forms an azeotrope with water and forms a separate phase after azeotropic distillation. Thereafter, the cleaned articles are rinsed with a rinsing agent containing from 99.9 to 60 weight percent of water and from 0.01 to 40 weight percent of the organic solvent, whereby the water content in the rinsing agent is higher than the water content in the cleaning agent.


Used cleaning and rinsing agent are combined and subjected to azeotropic distillation, wherein the azeotrope is separated into a water-rich phase and a solvent-rich phase and is recycled (see the abstract of this reference; incidentally, it is noted that the definition of forming an azeotrope with water is exactly the same as used in the present

application). As a preferred example in this reference, it is disclosed that as a cleaning agent a saturated solution of water in propyleneglycol mono n-butyl ether is used (see page 19, lines 13 and 14). From table III, the saturated concentration of water in propyleneglycol mono n-butyl ether is 17.7% water. This means that the water content of the cleaning agent of this reference is very different from that of the cleaning agent of the independent claims of the present invention. Furthermore, in the event that the percentage of water in the cleaning agent is somewhat higher than its solubility in the organic solvent at the given cleaning temperature, the cleaning agent is an emulsion (see page 3, lines 6 – 8). Such a cleaning agent, which incidentally is not a preferred embodiment of this reference, forms an emulsion of the type of droplets of water in a continuous organic phase, in contradistinction to the inventive cleaning agent which forms an emulsion of droplets of organic components in a continuous aqueous phase, as stated on page 7, lines 5 and 6 of the specification of the instant application and in amended claim 54. Thus, from the foregoing discussion it is respectfully submitted that amended claims 47 and 54 are neither anticipated nor made obvious by this reference. Furthermore, it is respectfully submitted that there is no suggestion at all in this reference that an emulsion having a high content of water and a low content of an organic component exhibits excellent cleaning properties.

In view of the foregoing, Applicants respectfully request reconsideration of the allowability of the claims, as amended, of the instant application. In addition, the undersigned would appreciate any further comments or suggestions by the Examiner in

order to expedite placement of the application into condition for allowance.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robert W. Becker". The signature is fluid and cursive, with a long horizontal stroke at the end.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE:

IN THE CLAIMS:

47. A method of cleaning an article with an active liquid cleaning composition, including the step of:

bringing into contact with an article a liquid cleaning composition comprising [at least] 65% to 99% by weight water and an organic component containing molecules having lipophilic and hydrophilic groups, wherein at a [cleaning process] temperature at which a cleaning takes place, said organic component is present in said water at a concentration greater than its miscibility in said water, whereas at at least one of a different temperature and a different concentration, said organic component is completely dissolvable in said water so as to form an optically clear liquid, and wherein said liquid cleaning composition, during a cleaning, is maintained in a status of an emulsion by mechanical agitation.

48. A method according to claim 47, wherein said cleaning composition is brought into contact with an article at a cleaning [process] temperature of from 40 to 60°C.

49. A method according to claim 47, wherein the mechanical agitation is effected by [which includes a step of undertaking cleaning under the effect of] ultrasound.

50. A method according to claim 47, wherein said liquid cleaning composition [is] forms an azeotrope, and which furthermore includes the steps of vaporizing said

liquid cleaning composition, and of causing vapor from said liquid cleaning composition to condense on said article that is to be cleaned therewith.

54. A liquid cleaning composition for cleaning an article, comprising:

[at least] 65% to 99% water; and

an organic component containing molecules having lipophilic and hydrophilic groups, wherein at a [cleaning process] temperature at which a cleaning takes place, said organic component is present in said water at a concentration greater than its miscibility in said water, whereas at at least one of a different temperature and a different concentration, said organic component is completely dissolvable in said water so as to form an optically clear liquid, and wherein said liquid cleaning composition, during a cleaning, is maintained as an emulsion with droplets of an organic phase in a continuous aqueous phase.

56. A liquid cleaning composition according to claim 54, wherein said organic component is completely dissolved in said water at a temperature that is lower than said cleaning temperature [that prevails during a cleaning process].

57. A liquid cleaning composition according to claim [55] 54, wherein said water is present by at least 75% by weight.

58. A liquid cleaning composition according to claim [57] 54, wherein said water is present by at least 85% by weight.

63. A liquid cleaning composition according to claim 54, wherein said organic component comprises glycol ether [as well as another organic component].